

## UNIT PLAN

<b>Unit Title</b> ‘Fantastic Forces’	<b>Stage/ Year:</b> Stage 1, Year 1
<b>Term:</b> Term Three	<b>Strand:</b> Physical World
<b>Duration:</b> 10 x 90 minute lessons	<b>Concept:</b> The effect of forces in our everyday life

### RATIONALE

#### **Rationale**

The unit ‘Fantastic Forces’ will assist students in developing the skills and knowledge of the concept of forces in everyday life. The strand Physical World develops students understanding that forces affect the movement of objects through push and pull. In this unit students will be working scientifically by identifying questions, making predictions and investigating to explore answers to their questions in regards to the unit. They will be collecting, recording and comparing observations about push and pull. Students will also have the opportunity to work technologically by generating their own design ideas and communicating multi-modally. Students follow instructions to collect, record and compare their observations using informal measurements. Students will construct their own meaning of science via social interactions that are developed through the discovery approach involving ‘unstructured playful situations’ which gives meaning and motivates children. (Fleer, 2007, p.208).

The activities enhance students learning by incorporating The Australian Academy of Science (2012) key features of each stage. Within the engage phase students will be given activities that will create interest and engagement into the topic, they will raise questions for inquiry based on their prior knowledge. The explore phase provides students with experiences of the ‘force’ concept, where they can investigate questions they may have. The explain phase is evident by introducing conceptual tools, constructing explanations of push and pull and students identifying misconceptions. The elaborate phase allows opportunities for students to apply the concepts of push and pull in new contexts. Lastly students are provided a chance to evaluate their understandings by reviewing and reflecting on their learning throughout the unit (p.40). The units use of the 5E model through a wide range of activities will ensure students fully participate in the unit by keeping them engaged with the content. The 5E model will allow students to take charge of their own learning in order to develop scientific skills and knowledge.

Throughout the unit students are given many opportunities to work individually and collaboratively with others in order to solve scientific problems regarding the concept push and pull. Students will be supported in discussions with questions to guide and facilitate their learning. Students will be given opportunities to be immersed with ICT throughout the unit. The unit also caters for the differentiated needs of all students, while paying close attention to the 8 Aboriginal ways of learning.

## GOALS

### SCIENCE

#### *Outcomes and Content*

**ST1-7PW** Describes effects of pushes and pulls on objects they encounter

A push or a pull affects how an object moves or changes shape.

Students:

- Describe the effects of push and pull on familiar objects
- Explore how different strengths of push and pull affect the movement of objects
- Demonstrate ways people use push and pull in their everyday life

**ST1-4WS** Investigates questions and predictions by collecting and recording data, sharing and reflecting on their experiences and comparing what they and others know

- *Students question and predict by*; Responding to and posing questions & Making predictions
- *Students plan investigations by*; Identifying the purpose of the investigation & Suggesting ways that could be made to collect data
- *Students conduct investigations by*; working collaboratively & Using a range of methods to gather information & Uses informal measurements to collect and record observations.
- *Students process and analyse data and information by*; Using a range of methods to sort and represent information; Describing changes observed in investigations & Comparing observations with predictions through discussion to see if they match hypothesis
- *Students communicate by*; Representing, displaying and communicating observations, understandings and information in different modes & Using ICT to support their understanding

**ST1-5WT** uses a structured design process, everyday tools, materials, equipment and techniques to produce solutions that respond to identified needs and wants.

- *Students generate and develop ideas by*; Researching different sources of information & Exploring materials by observing and manipulating & Using techniques for documenting and communicating ideas & Describing the features of ideas and materials selected
- *Students produce solutions by*; Using a range of everyday equipment, materials and techniques & Working cooperatively and safely
- *Students evaluate by*; Identifying how their solution meets the needs and wants of users/audiences

**Intra-curricula Links:** Material World, Products.

<p><b>English</b>  <u>Outcomes and Content</u>  <b>EN1-1A</b> - Communicates with a range of people in informal and guided activities demonstrating interaction skills and considers how own communication is adjusted in different situations</p> <ul style="list-style-type: none"> <li>• Contribute and engage in discussions</li> <li>• Understand the purpose and features of tables and charts</li> </ul> <p><b>EN1-2A</b> - Plans, composes and reviews a small range of simple texts for a variety of purposes on familiar topics for known readers and viewers</p> <ul style="list-style-type: none"> <li>• Plan and compose informative texts</li> <li>• Draw on personal experiences and knowledge when writing</li> </ul> <p><b>EN1-6B</b> - Recognises a range of purposes and audiences for spoken language and recognises organisational patterns and features of predictable spoken texts</p> <ul style="list-style-type: none"> <li>• Recognise and respond to instructions from teachers and peers</li> </ul>	<p><b>Mathematics</b>  <u>Outcomes and Content</u>  <b>MA1-9MG</b> - Measures, records, compares and estimates lengths and distances using uniform informal units, metres and centimetres</p> <ul style="list-style-type: none"> <li>• Record lengths and distances by referring to the number and type of uniform informal unit used</li> <li>• Investigate different informal units of length used in various cultures, including those used in Aboriginal communities</li> <li>• Records and estimates lengths and check with</li> </ul> <p><b>MA1-12MG</b> - Measures, records, compares and estimates the masses of objects using uniform informal units</p> <ul style="list-style-type: none"> <li>• Identify materials that are light and heavy</li> </ul>
<p><b>Human Society and It's Environment</b>  <u>Outcomes and Indicators</u>  <b>ENS1.6</b> - Demonstrates an understanding of the relationship between environments and people</p> <ul style="list-style-type: none"> <li>• Identifies aspects of things in the environment and how they change, focusing on how it has changed from when the Indigenous tribes populated Australia</li> <li>• Recognised that people from other cultures have a differing relationship with the environment</li> </ul> <p><b>CUS1.3</b> - Identifies customs, practices, symbols, languages and traditions of their family and other families</p> <ul style="list-style-type: none"> <li>• Participates in activities involving communication of cultures</li> </ul>	<p><b>Creative Arts</b>  <u>Outcomes and Indicators</u>  <b>DRAS1.2</b> - Conveys story, depicts events and expresses feelings by using elements of drama and the expressive skills of movement and voice</p> <ul style="list-style-type: none"> <li>• Creates and adapts stories for enactment</li> <li>• Expresses feelings and other responses when depicting an event</li> </ul> <p><b>DRAS1.3</b> - interacts collaboratively to communicate the action of drama with others</p> <ul style="list-style-type: none"> <li>• Shares their drama making with others</li> <li>• Interacts abstractly or in role to communicate meaning to the audience</li> </ul>
<p><b>Personal Development, Health and Physical Education</b>  <u>Outcomes and Indicators</u>  <b>MOS1.4</b> - Demonstrates maturing performance of basic movement and compositional skills in a variety of predictable situations.</p>	<p><b>Religion</b>  <u>Outcomes and Indicators</u>  <b>S1.2</b> - Demonstrates growing familiarity with scripture stories</p> <ul style="list-style-type: none"> <li>• Recalls stories</li> </ul>

- Uses fine motor skills, focusing on push and pull forces, in play situations

**PSS1.5** - Draws on past experiences to solve familiar problems

- Follows basic safety procedures
- Suggest solutions to problem

- Make comments and responds to aspects of stories.

### ASSESSMENT

#### **Formative Assessment**

Formative assessment will be an ongoing process throughout each lesson. Majority of the formative assessment will consist of informal assessment strategies such as observations on ability to respond to and apply understanding, discussion, questioning, evaluations of recordings and demonstrations. Formative assessment is present throughout all ten lessons through the above methods. A diagnostic assessment is present in lesson one using the Fantastic Forces diagnostic rubric provided as well as the class KWL chart. Throughout lesson nine there is also peer and self-evaluations conducted which is a form of assessment as learning.

#### **Summative Assessment**

Summative assessment will take place during the tenth lesson of the unit of work. The summative assessment will bring together everything the students have learnt throughout the duration of the unit of work 'Fantastic Forces'. A rubric for this summative assessment is provided and it is also supported by formative assessment throughout the lesson such as questioning and observations.

**Work Samples** - to show understanding and achievement of outcomes

*(To be added once the lesson has been completed for moderation purposes in the future)*

#### **Evaluation of Unit**

The evaluation of the unit will be done in the form of questioning:

- Was the unit of work 'Fantastic Forces' successful?
- Did students achieve the outcomes of the lesson?
- Were students effectively engaged in all activities?
- Were the resources supplied effective and useful?
- Did the unit of work follow the 5E model?
- Did the unit of work cater to all students' needs, interests and abilities?

- Did the unit cover the content in enough or too little detail?
- Were the assessments suitable to gauge student understanding of subject matter?
- Did the unit encourage students to engage in the effects of force?
- Were students challenged with unit content?
- Did students work well with ICT components?
- Did students work well in groups?
- Did students enjoy using scenarios and role-play?
- Did the unit cater for all differentiation aspects of the class? e.g special education, extension activities, learning needs, abilities and disabilities
- Did the implementation of aboriginal perspectives and 8 ways of learning how to be effective?

## STUDENTS

**Number** 19 Students

### **Differentiation**

The class is made up of 19 students, all with differing abilities and learning styles. The class consists of 4 Indigenous students and 2 students that work significantly below stage level. There are 3 students that work beyond stage level in different areas of the curriculum. Depending on students ability they will respond to tasks through drawings, words or sentences. Indigenous students are able to respond in ways that suit their way of learning. They may respond to what is occurring differently or use different words to describe an event or material. Evidence of differentiation is explicitly shown for:

- Students Working Below Stage Level - Lesson 5 - Students will be given the procedure and asked to draw picture of what they did at each step and what happened at the completion of the experiment.
- Aboriginal and Indigenous Students - Lesson 1 - Students will have access to a range of toys and objects that are part of their

### **Skills, interests and prior knowledge**

Lessons should be created and based upon students prior knowledge and experience with the physical world. Students have had experience with push and pull through every day experiences such as:

- Pushing a door open and pushing/ pulling it closed
- Pulling their clothes on such as pants and socks
- Throwing a ball and pulling a ball into your chest
- Pushing and pulling toys to make them move
- Observing sinking and floating objects in the bath, swimming pool and other bodies of water
- Students have been subjected to videos and television that show to movement of these forces

<p>culture and background as well as using drawings in their science journals to assist writing.</p> <ul style="list-style-type: none"> <li>● <u>Students Working Above Stage Level - Lesson 4</u> - Students will complete the worksheet writing a short response and annotated pictures.</li> </ul> <p>Students will be mostly working and pairs - these pairs will be made up of students with differing abilities.</p>	
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**LEARNING MATTER**

<p><b>Essential Understandings</b> Students will learn about:</p> <ul style="list-style-type: none"> <li>● Common characteristics of the force pull</li> <li>● Common characteristics of the force push</li> <li>● Everyday activities that use push and pull</li> <li>● The effects of pushes and pulls</li> <li>● Familiar objects and activities that use push and pull</li> <li>● How different strengths and weights affect push and pull and floating and sinking</li> <li>● The way objects move on land and through water</li> <li>● Common characteristics of floating and sinking</li> </ul>	<p><b>Essential Skills</b> Students will learn to:</p> <p>Predict, observe, sort and classify, investigate, experiment, explore and discover, plan, design and create, represent, communicate and make and record findings. Examples of these in relation to physical world, push and pull include:</p> <ul style="list-style-type: none"> <li>● Predicting outcomes of push and pull, sink and float</li> <li>● Investigating if their predictions are accurate</li> <li>● Classifying objects into push and pull and sinking and floating</li> <li>● Carrying out experiments and investigations related to gravity, push and pull and sinking and floating</li> </ul>
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<p><b>Related Text Types</b></p> <ul style="list-style-type: none"> <li>● Who Sank The Boat? - By Pamela Allen</li> </ul>
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**LEARNING SEQUENCE**

<p><b>Key</b></p> <p>(AF) Assessment For Learning                      (AO) Assessment Of Learning                      (AA) Assessment As Learning</p> <p>(D) Differentiation- Modified, core and extension</p> <p>(AI) Aboriginal &amp; Torres Strait Islander                      (AI-LM) Learning Maps                      (AI-NV) Non-Verbal</p>		
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(AI-LL) Land Links	(AI-NL) Non-Linear	(AI-DR) Deconstruct Reconstruct
(AI-CL) Community Links	(AI-SI) Symbols & Images	(AI-SS) Story Sharing

5 E' S	Learning Engagements	Resources and Preparation	Outcomes	√
E N G A G E	<p><b>Lesson 1: Moving Toys</b></p> <ul style="list-style-type: none"> <li>● Introduce science journal to students, explaining that they will be writing their different learnings and understanding in this throughout all lessons. Students working below stage outcomes will assist their writing with drawings (D).</li> <li>● Explain to students that they need to think about the different language that is associated with push and pull throughout their activities for the creation of a word wall.</li> <li>● Teacher to supply a variety of toys (including Aboriginal toys if available) and objects for students to interact with, looking at the way the objects are moving through exploration. Question students on what they are doing in relation to push and pull, having them look at the way they are manipulating the toys and objects to make them move. Teacher records each individual student answering one question, on the iPad, and assess them on this using a rubric. (AF)(AI-SS).</li> <li>● Students then write or draw (depending on ability) in their science journal what they explored while playing with the different toys. Teacher to prompt students with questions to ensure they are thinking about what they are writing (AF)(D). Through drawings students are addressing the Aboriginal way of representing what they did (AI-SI).</li> <li>● For students working beyond stage level, as an extension activity, have them write a story in their writing books that is about the force of push and pull. (AF)(D)</li> <li>● Teacher to assess student learning through the game 'may the force be with you'. Selected students will choose an action to perform at the front of the class and the rest of the group must move to the allocated area of either push or pull. Teacher will then question students why they moved to that area (AF).</li> <li>● Teacher to explain KWL chart which will be displayed on a wall of the classroom. Students will write on post-it notes what they <u>know</u> and <u>want</u> to learn in the Fantastic Forces unit. Students can also draw pictures to represent their understanding. (AF)(D)(AI-SI)</li> <li>● To end the lesson, a word wall will be created as a class. Students will write or draw (depending on ability) different words they have learnt throughout the lesson. If known and if available add the</li> </ul>	<p>Toys iPad</p> <p>Science Journal</p> <p>Writing books</p> <p>Signs for 'may the force be with you' game (classroom labels)</p> <p>KWL chart Post-it notes Word Wall</p>	<p><b>ST1-7PW</b></p> <p><b>EN1-1A</b></p> <p><b>MOS1.4</b> <b>PSS1.5</b></p>	

	<p>Aboriginal translation of the Eora Tribe. (AF)(D)(AI-SI)(AI-CL)</p>			
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">E N G A G E</p>	<p><b>Lesson 2: Adventure Playground Hunt</b></p> <ul style="list-style-type: none"> <li>● Students throughout this lesson will recognise and describe the movement of a range of familiar objects within the natural environment.</li> <li>● Development of key terminology in relation to the concept of push and pull prior to incursion. For example; quick, slow, backwards, forwards, round, swing, turn, and slide.</li> <li>● During this engage lesson students will participate in an incursion to the local school adventure playground which is equipped with swings, slides etc. <i>(If the school playground is unavailable or inaccessible provide students with relevant videos, images or literature representing a playground setting.)</i></li> <li>● Prior to the learning experience explain to students that we will be explorers who are in search of things which move whilst travelling to our destination as well as at our destination.</li> <li>● Ensure to discuss with students what we must consider during our journey to ensure safety for all.</li> <li>● Throughout the visit provide the opportunity for students to explore the equipment available, focusing on questioning students; asking them to describe what they are doing and how they are making the equipment move. (AF)</li> <li>● Provide students with the choice of using iPADS or their science journal to record or draw their observations and interactions with the environment (AF)(D)(AI-SI)</li> <li>● Throughout the lesson ensure to make connections to the natural environment, focusing on the concept of land links. (AI-LL)</li> <li>● Once the incursion is complete, upon arrival at the classroom provide opportunities for class discussion, listed below are examples of questions to prompt students thinking and clarify their understanding: (AF)             <ul style="list-style-type: none"> <li>○ Can you describe how one of the objects in the environment moved?</li> <li>○ Did you pass anything on the way to the park which moved?</li> <li>○ Did anything you saw move on its own?</li> </ul> </li> <li>● Provide students with the opportunity to present their recordings to their fellow peers. (AF)</li> <li>● Provide opportunities for students to add to the world wall established in the first lesson. Adding words from the language of the Eora tribe if known.</li> </ul>	<p>Playground</p> <p>iPADS Science Journal</p> <p>IWB Word Wall Post-it notes</p>	<p><b>ST1-7PW</b></p> <p><b>EN1-1A</b></p> <p><b>MOS1.4</b> <b>PSS1.5</b></p> <p><b>ENS1.6</b></p> <p><b>CUS1.3</b></p>	



<p><b>E X P L O R E</b></p>	<p><b>Lesson 3: Push and Pull in Everyday Life</b></p> <ul style="list-style-type: none"> <li>● Have a class discussion on everyday activities where students use the motion of push and pull. Teacher to prompt students with questions and scenarios to guide the discussion. (AF)</li> <li>● Now that students have had time to explore the room, teacher to lead a game of ‘Simon says’ related to push and pull. Students stand around the room and the teacher says ‘Simon says do an activity where you need to pull the object’ or ‘Simon says find something that you do in everyday life that can be both pushed and pulled’. Teacher to prompt students if they are unsure, e.g. what do you do when you open and close a door. Teacher to move around the room and question students on what they are doing to ensure the outcomes of the lesson are being met. (AF)</li> <li>● Students will then be working in pairs with an iPad, teacher will select the pairs prior to the lesson to ensure they are mixed ability. Students are to move around the room and do activities that require them to push and pull. While one of the students is doing the activity the other will be taking a photo of them with the iPad. Each student is to have two photos of them doing a push and a pull movement. (D)</li> <li>● Students will then use a photo collage app on the iPad to upload their photo and create a caption for it, e.g. ‘in this photo I am pulling the door open’ or ‘in this photo I am pushing the cupboard closed’. This will be used as formative assessment (AF)</li> <li>● Teacher will then upload each students collage to the interactive whiteboard and the student will present their photo to the class with a small blurb telling the group what the force is and where they use it in everyday life. (AF)</li> <li>● At the end of the lesson, students will then add words and drawings (depending on ability) to the word wall created in lesson one. Adding words from the language of the Eora tribe if known. (D)(AI-SI)(AI-CL)</li> </ul>	<p>Objects in the room</p> <p>iPad</p> <p>Photo collage app</p> <p>IWB</p> <p>Word Wall</p> <p>Post-it notes</p>	<p><b>ST1-7PW</b></p> <p><b>EN1-1A</b></p> <p><b>MOS1.4</b></p> <p><b>PSS1.5</b></p>
<p><b>E X P L O R E</b></p>	<p><b>Lesson 4: Let’s sink or float!</b></p> <ul style="list-style-type: none"> <li>● The teacher will gain prior knowledge by asking students what they think sinking and floating means. Ask for examples of things that sink and float. Record their ideas in the class science journal. (AF)</li> <li>● The teacher will have the notebook file presented on the board. There will be multiple objects that will sink or float. Students will be required to place items into the sink or float column, depending on what they think. Students should be able to state the reason why they think it will sink or float.</li> <li>● The teacher will read the book ‘Who sank the boat?’ By Pamela Allen. Tell students before the book is read to think about sinking and floating while the book is being read.</li> <li>● Teacher will ask students what was happening in the book.</li> <li>● Teacher will ask students what makes something float and something sink? The teacher will be looking</li> </ul>	<p>Class journal</p> <p>Notebook file</p> <p>Book - Who Sank the boat? - Pamela Allen</p>	<p><b>ST1-7PW</b></p> <p><b>ST1-4WS</b></p> <p><b>ST1-5WT</b></p> <p><b>EN1-1A</b></p> <p><b>EN1-6B</b></p> <p><b>MOS1.4</b></p> <p><b>PSS1.5</b></p>

	<p>for answers such as light, heavy, big or small.</p> <ul style="list-style-type: none"> <li>• Students will be placed in pairs and will be given four items to experiment with. They will need to test whether they float or sink in their container of water. Students will predict what they think will happen in the P column in the POE table (Predict, Observe, Explain).</li> <li>• Students will complete the investigation. Throughout this activity the teacher should rove the room and questions why students think each item will sink and float. The teacher will record answers and findings to evaluate.</li> <li>• At the completion of the investigation, students are to fill in the rest of the table with what they observed and why they think it sunk or floated. <u>Modified:</u> These students will be required to record their answers using a drawing and one word. <u>Core:</u> These students will be required to record their answers using dot points. <u>Extension:</u> These students will record their answers using short responses and labelled pictures if time permits. (AF) (D)</li> <li>• After the experiment students will return to the discussion floor and will work with the objects used throughout the activity. Students will be required to hold two items and see the difference in weight- <i>What is heavier? What is lighter? Is it nearly equal in weight?</i> Students will think, pair, share about if they think this affects if it sinks or float and why?</li> <li>• For students working beyond stage level, as an extension activity, have then write a mathematical problem about this investigation in their science journal. Using pictures to assist their ideas. (AF)(AI-SI)(D)</li> <li>• Add new words learnt to the word wall. Incorporating words from the language of the Eora tribe if known.</li> </ul>	<p>Materials: Ping pong balls Scissors Pegs Pencils Containers Water Record sheets</p>	<p><b>MA1-12MG</b></p>	
<p><b>E X P L O R E</b></p>	<p><b>Lesson 5: Moving Forward</b></p> <ul style="list-style-type: none"> <li>• Look at the KWL chart that was created in Lesson 1. Using Post-It notes students write or draw (depending on ability) what they have learnt so far and stick it under the ‘What we have Learnt’ section. (AF)</li> <li>• Think, Pair, Share - What types of transport push? What types of transport pull?</li> <li>• Display pictures of types of transport on the IWB (include pictures of Aboriginal and Indigenous forms of transport). Students to state if each transport moves by pushing or pulling. Ask students how they know it pushes and pulls and what they think make it push or pull. Discuss what is giving it the energy to move forward? (Suggest answers include: wind, motor, horse, person, battery). Record these answers in the class science journal. (AI-SI)</li> <li>• Tell students that they will be working in Collaborative teams today to investigate if boats are pushed or</li> </ul>	<p>KWL Chart Post-Its</p> <p>IWB Transport Photos Class Science Journal</p>	<p><b>ST1-7PW ST1-5WT ST1-4WS</b></p> <p><b>EN1-1A EN1-2A EN1-6B</b></p> <p><b>ENS1.6</b></p>	

	<p>pulled forward. Tell them that because we can't use real boats, we are going to use plastic bottles.</p> <ul style="list-style-type: none"> <li>● Supply students with the materials and have them explore ways that they can make the “plastic bottle boat” move across the water without the use of their hands.</li> <li>● Demonstrate the experiment, but don't let go of the bottle in the water, let them find out what happen after that for themselves.</li> </ul> <ol style="list-style-type: none"> <li>1. Make a small hole in the bottom of the bottle, just big enough for the straw and close to the edge.</li> <li>2. Put the straw into the hole leaving about 1cm sticking out. Bend it at angle and plug the hole with blu tack to seal and keep the straw in place.</li> <li>3. Put about 2 teaspoons of baking soda onto a piece of tissue paper. Wrap and twist like a bon bon</li> <li>4. Pour some vinegar into the bottle, standing by the tub of water. Push the soda bon bon into the bottle and replace the lid quickly. Place in tub with straw in the water and let go.</li> </ol> <ul style="list-style-type: none"> <li>● As a class, develop the method that was taken and write it up on the interactive whiteboard to refer back to during the completion of the activity.</li> <li>● Allocate teams and roles. Send teams off to complete their predictions in their science journals. Students that are working below stage level can draw their predictions and write what they can, the core group can write a few dot points and the working beyond stage level can write sentences. Through drawing students are addressing the Aboriginal way of representing what they did. (D)(AI-SI)</li> <li>● Ask the team Manager to collect the materials and start completing the experiment.</li> <li>● Discuss parts of the procedure and what they will be including in each section. Students are given a template to work off to write up the procedure, depending on their ability (see appendix). Students draw a picture of what happened in the experiment, for the core students they are to write what they observed as well. The Working Beyond students are to write why they think it happened? The working below students circle if it is push or pull. Through drawing students are addressing the Aboriginal way of representing what they did. (D)(AI-SI)</li> <li>● Come back as a class and discuss the results. (AF)</li> <li>● Add words and images to the word wall. Adding words from the language of the Eora tribe if known.</li> </ul>	<p>Per group: Plastic Bottle Scissors Straw BluTack Baking Soda Tissue Paper Vinegar Tub Water</p> <p>Role Badges</p> <p>Word Wall</p>		
<p>E X P L A I N</p>	<p><b>Lesson 6: Where we have come from?</b></p> <ul style="list-style-type: none"> <li>● Revisit what students have learnt in the last 5 weeks by brainstorming on the notebook file. <i>What have we learnt about in the last 5 weeks?</i> Students will come to the board and write their answer. Teacher will look for answers such as push, pull, sink, float etc. (AF)</li> <li>● Looking at the KWL chart and what students thought they knew at the beginning of the unit, discuss, explain and eliminate any misconceptions they may have had. Allowing them to source the</li> </ul>	<p>IWB Notebook File</p>	<p><b>ST1-7PW</b> <b>ST1-4WS</b> <b>ST1-5WT</b></p> <p><b>EN1-1A</b> <b>EN1-6B</b></p>	

	<p>misconceptions out and giving reasoning. (AI-DR)(AI-NL)</p> <ul style="list-style-type: none"> <li>• After the brainstorm students will complete an interactive activity. They will be presented with pictures of push and pull objects and float and sink objects. Students will be required to drag and drop pictures and words into the correct column. (AF)(D)</li> <li>• Introduce the term ‘force’ as a push or pull that can make an object move, change direction or change shape. Discuss how students can use the word force to describe pushed and pulls they have experienced (e.g. ‘push force’ ‘pull force’)</li> <li>• Think, pair, share a sentence using the word force in relation to the pushes and pulls they have investigated.</li> <li>• Ask students if they know the name of the pull that makes things fall to the ground. Explain that the pull of gravity is also a force. Model using the term gravity in a sentence.</li> <li>• Provide each pair with a feather and a tennis ball. Have students predict what they think will happen when each is dropped. Have them record each other with the iPads dropping the objects from shoulder height. Students will replay their videos and discuss the differences between the two falling objects. E.g. ‘the ball fell faster because...’ Some children may describe using gestures, words or sentences. (D)(AI-NV)</li> <li>• Think, pair, share a sentence in relation about gravity in relation to an experience they have encountered.</li> <li>• Come back as a whole group and discuss as a class, having some pairs share their video and discussion. (AF)</li> <li>• Class will explore the learning object ‘Pushing and Pulling: Push or Pull?’ on iPads or as a class depending on iPad availability. Teacher will move around the room and question students.</li> <li>• In groups of four students will create a short role play about that they have learnt so far in the unit and present it to the class. (AI-NV)</li> <li>• As a class, revisit the KWL chart - writing down what we have learnt and adding any further elaborations of the content. (AF)</li> </ul>	<p>iPads Tennis balls Feathers</p> <p>IWB Activity <a href="http://www.scotl.e.edu.au/ec/viewing/L1120/index.html">http://www.scotl.e.edu.au/ec/viewing/L1120/index.html</a></p> <p>Props KWL chart</p>	<p><b>MA1-12MG</b></p> <p><b>DRAS1.2</b> <b>DRAS1.3</b></p> <p><b>MOS1.4</b> <b>PSS1.5</b></p>	
<p><b>E L A B O R A</b></p>	<p><b>Lesson 7: Boomerangs to Helicopters</b></p> <ul style="list-style-type: none"> <li>• If available a member of the local Aboriginal community will come out to the school the show different aspects of their culture (for example, lighting fire without matches, boomerang throwing, spear throwing, trap making, gathering food and a special didgeridoo performance). The guest speaker will describe these aspects of their culture as well as demonstrate the ones they can. Students will have the opportunity to participate in a few of these activities. (AI-CL)(AI-SS)(AI-LL)</li> <li>• After the lesson have a class discussion about how what we learnt from the guest speaker relates to push</li> </ul>	<p>Gloves for food gathering</p>	<p><b>ST1-7PW</b> <b>ST1-5WT</b> <b>ST1-4WS</b></p> <p><b>EN1-1A</b> <b>EN1-6B</b></p>	

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- and pull. Create a class Venn diagram in the journal to distinguish which activities are push, pull or both, use pictures as well as words and include word from the Eora tribe. (AI-SI) (D) (AF)
- In the students own science journal, they can choose one aspect of the culture, use words and pictures (depending on ability) to explain how it is push or pull.
  - If a member of the local Aboriginal community is not available, the teacher is to organise sporting activities that imitate aspects of the Aboriginal culture. The teacher must explain the meaning behind the activity to students. See <http://www.ausport.gov.au> for assistance. At the conclusion of this activity, have a class discussion about what we found out and create a class Venn diagram in the journal to distinguish which activities are push, pull or both. (AI-LL)(AI-SS)(AI-CL)(AI-NV) (D) (AF)
  - Teachers inform the students that and Aboriginal Indigenous scientist and inventor, David Unaipon, anticipated the invention of the helicopter through his early drawings using the boomerang as the basis. Ask students to suggest why they think the boomerang would be used as the basis for the helicopter. (AI-SS)
  - Introduce the paper helicopter you have made. Ask students to predict what will happen when you release the helicopter and explain their prediction. Release the helicopter and discuss how students’ observations compared with their predictions.
  - Review the idea that gravity pulls things to the ground. Lead a discussion about how the upward push of air on the helicopter wings causes the helicopter to spin.
  - Explain that the focus of the team investigation will be to investigate how changing the size of the wings affects how fast the helicopter falls. Introduce the investigation planner in the class science journal and read the question for investigation: ‘What happens to the helicopter fall time when we change the wing size?’ As a class explain and fill in each section of the planner, focusing students attention on what we are going to change and how we will do that
  - Allow time for teams to create and modify their helicopters. As teams compare dropping both their paper helicopters, you, or students, might take a digital photograph of their investigation to use as a record of their findings.
  - Use questioning to help students think about what is happening to their paper helicopter, such as: What pulls the helicopter down? How does it move? What pushes up against the wings of the helicopter? How do you know? Have you seen examples of this anywhere else, such as, real helicopters or parachutes? Why does the helicopter with bigger/smaller wings fall more slowly/more quickly? (AF)
  - Ask students to write and draw about their results in their science journals. You could provide students with prompts (depending on their ability) such as: The thing I changed about my helicopter was ... For example, the size of the wings; The thing I observed about my helicopter was ... Such as, the helicopter

Class journal

[http://www.ausport.gov.au/\\_data/assets/pdf\\_file/0003/376140/SP\\_31864\\_TIG\\_resource\\_4-6.pdf](http://www.ausport.gov.au/_data/assets/pdf_file/0003/376140/SP_31864_TIG_resource_4-6.pdf)

Paper helicopter

Investigation Planner

Helicopter template  
Digital Camera  
Paperclips  
Cardboard with

**ENS1.6**  
**CUS1.3**  
  
**MOS1.4**  
**PSS1.5**

	<p>with bigger wings fell more slowly/the helicopter with smaller wings fell more quickly; The things I kept the same about my helicopter were...</p> <ul style="list-style-type: none"> <li>● Add words and images to the word wall. Adding words from the language of the Eora tribe if known. (D) (AF)</li> </ul>	<p>template Word Wall</p>		
<p>E L A B O R A T E</p>	<p><b>Lesson 8: Use your strength to move me!</b></p> <ul style="list-style-type: none"> <li>● Students throughout this lesson will focus on the effects of force in relation to push and pull. Students will also focus on measuring informally how far their object travels if pushed with maximum or minimal force across different surfaces,</li> <li>● Provide the students with a block or a toy car to push across different surfaces within the natural environment. (D)</li> <li>● Different surfaces that can be used throughout this lesson include; the rug, clothing, desk, mat, dirt, sand etc. (D)</li> <li>● Allow students to push their objects using two specific forces; fast and slow.</li> <li>● Students will record their experiment and observations using the IPADS provided or their science journals through different representations. (AF) (D) (AI-SI)</li> <li>● Once students have pushed their object across a specific surface they will estimate, measure, record and compare the length and distance using informal units, including those used in Aboriginal communities. For those that need extending, they can begin to measure using formal units (AI-LM)(D)</li> <li>● Throughout students investigation provide opportunities for questioning to prompt students thinking. (AF) <ul style="list-style-type: none"> <li>○ When was it the easiest to push your item?</li> <li>○ When did the item move the fastest?</li> <li>○ How far did the object travel on the rug? How did you measure this?</li> <li>○ On which surface did the object move the fastest when pushed at a fast pace?</li> </ul> </li> <li>● Provide students with the opportunity to present their findings to their fellow peers, question students throughout their presentation to clarify student’s conceptual understanding. (AF)</li> <li>● Provide the opportunity for student’s to add to the word wall established in the first engage lesson. Adding words from the language of the Eora tribe if known.</li> </ul>	<p>Toy Cars Blocks Rug Clothing Desk Mat Dirt Sand IPADS Journals  Interactive Whiteboard Word Wall Post-it notes</p>	<p><b>ST1-7PW</b> <b>MA1-9MG</b> <b>MA1-12MG</b> <b>MOS1.4</b> <b>ENS1.6</b> <b>CUS1.3</b></p>	
<p>E L A</p>	<p><b>Lesson 9: Let’s Build!</b></p> <ul style="list-style-type: none"> <li>● The teacher will engage students what they know about sinking and floating from prior lessons.</li> </ul>		<p><b>ST1-7PW</b> <b>ST1-4WS</b></p>	

B O R A T E	<ul style="list-style-type: none"> <li>The teacher will have a picture on the notebook file of a ship. The teacher will explain to students that depending on the shape and material used for the ship will determine if the boat will sink or float. E.g. an ocean liner which is heavy can float, however a light object like a paper clip will sink in the ocean. The teacher will go into detail about the aspects of boats and what aspects of building are involved in order for it to float.</li> <li>The teacher will create a force-arrow diagram by using arrows to represent the push and pull forces used to make the boat float. The arrows represent the pull of gravity downwards and push or the water up towards the boat</li> <li>The teacher will prompt students for answers to the following ‘<i>What other materials could you use if you were building a boat?</i>’ ‘<i>Think about what materials the Aboriginals and Indigenous people might have used to build boats.</i>’ Make sure students give reasons for their answers. (AI-CL)</li> <li>The teacher will present a slide on the notebook file about the Aboriginal canoe. Looking at pictures and basic information on how they built their boats and what they were used for. (AI-CL)</li> <li>The teacher will show the Youtube Video on Noah’s Ark. The movie will represent the purpose of why Noah built the ark, how he made it, what the ark was used for and shows the final result.</li> <li>Students will be presented with the question- <i>Is there another way to build a boat to get yourself and your animals across the river of water?</i></li> <li>Students will work in pairs and have a wide range of materials available to create a boat that will float in water. They will need to consider the type of materials they will use to make their boat float and waterproof. They will continue to test their design in a container of water. Students will record in their science journals, the materials they use and how they made their boat, as well as if it was successful at floating or not and why? Question students on what they think would happen if they added weight to the boat they have made. Students can use pictures, words, symbols and drawing to complete this. The teacher will question students, especially those working below stage level to ensure they can express and explain the knowledge gained. (AF)(D)</li> <li>Each pair of students will swap with a pair and are to peer assess the quality of the boat. They will be required to look at the materials used to build the boat, test whether it floats and whether it makes it to the side of the container. (SEE APPENDIX) (AA)</li> <li>Review the word wall and add new terms learnt, including from the language of the Eora tribe if known.</li> </ul>	<p>Notebook File</p> <p>IWB &amp; Notebook File</p> <p>Noahs Ark Video: <a href="https://www.youtube.com/watch?v=QGNMW6WRvLs">https://www.youtube.com/watch?v=QGNMW6WRvLs</a></p> <p>Cardboard Toilet rolls Paddle pop sticks Plastic cups Paper Foil Containers Water Toy animals</p>	<p><b>ST1-5WT</b></p> <p><b>EN1-1A</b></p> <p><b>S1.2</b></p>
E V A	<p><b>Lesson 10: On the Edge</b></p> <ul style="list-style-type: none"> <li>Review science journal and word wall</li> <li>Repeat the toy activity and game ‘may the force be with you’ from lesson one. Ask students if they have</li> </ul>	<p>Word wall Toys</p>	<p><b>ST1-7PW</b></p>

<b>L U A T E</b>	<p>changed any of their ideas as a result of the investigations and what new ideas they have developed and what activities helped them to learn these new ideas?</p> <ul style="list-style-type: none"> <li>● Bring the class together and bring the push and pull pictures up on the IWB (see appendix). Annotate the pictures with students contributions (arrows, words, etc.)</li> <li>● Revisit the KWL chart - looking at final understandings of the topic and filling out what the students have now learnt. Have a class discussion on this.</li> <li>● Students will then be put in small groups and will be asked to create a presentation on what they learnt over the course of the unit (how they present is their choice e.g. role play, poster, etc.) Students will complete a peer and self-assessment for the presentation. The teacher will also assess them on this as a final assessment using a rubric. (D)(AO)(AA)(AI-LM)(AI-SS)</li> <li>● At the end of each presentation, the class will ask students questions about their presentation.</li> </ul>	IWB Pictures KWL chart Props		
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RESOURCES

<p><b>Text</b> Who Sank the Boat? by Pamela Allen</p>	<p><b>Online/IWB/Audio/Visual</b>                  IWB                  IPADS                  Computers                  Digital Camera                  Notebook software                  Photo collage app (Frame Artist +)                  Noahs Ark Video: <a href="https://www.youtube.com/watch?v=QGNMW6WRvLs">https://www.youtube.com/watch?v=QGNMW6WRvLs</a>                  Pushing and Pulling: Push or Pull? - <a href="http://www.scootle.edu.au/ec/viewing/L1120/index.html">http://www.scootle.edu.au/ec/viewing/L1120/index.html</a></p>
<p><b>Place</b> School Playground Classroom Environment</p>	<p><b>Human</b> Aboriginal Guest Speaker (<i>If available</i>)</p>

<b>Materials/Real-life items/Other Resources</b>			
Ping pong ball	Scissors	Pegs	Pencil
Record sheet	Cardboard	Toilet paper rolls	Paddle pop sticks



Plastic cups	Paper Foil	Container	Role badges
Water	Toy animals	Objects around the room	Toys (including Aboriginal toys if available)
Paper clips	Post-It Notes	Water	Tubs
Vinegar	Tissue Paper	Baking Soda	Blu Tack
Straws	Scissors	KWL chart	Classroom Labels
Tennis balls	Feathers	Props	

RISK ASSESSMENT

	<i>Hazard Identification During Lesson</i>	<i>Elimination or Control Measures</i>
<b>1</b>	- Moving around the classroom	- Communicate rules and expectations - Teacher supervision
<b>2</b>	-Travel to and from playground - Interaction with equipment and natural environment	- Ensure rules and expectations are communicated prior to incursion - Class must stay as a group when travelling to and from the playground - Conduct investigations in small groups with supervision
<b>3</b>	- Pushing and pulling other students/ pushing objects into other students	- Communicate expectations - Teacher supervision, make injuries that can occur aware to students at the beginning of each lesson
<b>4</b>	- Water being spilt on the floor - slipping - Use materials in an inappropriate manner	- Communicate that students must clean up what mess they have made and walk carefully around the classroom. - Communicate to students not to put materials in or near their mouth or eyes.
<b>5</b>	- Water being spilt on the floor - slipping - Digesting the baking soda/vinegar	- Communicate that students must clean up and walk carefully around the room. - Communicate to students not to put materials in or near their mouth or eyes.
<b>6</b>	- Interaction with equipment and natural environment	- Teacher supervision - Conduct investigations in small groups

	- Moving around the classroom	- Communicate rules and expectations of moving slowly around the room with caution of surroundings e.g. furniture and other people
<b>7</b>	- Being hit by objects being thrown - Bitten by animals/insects	- Follow teacher and guests instructions, do not get in the way of the person throwing the objects, spears have no sharp end. - Where gloves if possible.
<b>8</b>	- Interaction with equipment and environment	- Teacher supervision
<b>9</b>	- Water being spilt on the floor - slipping - Use materials in an inappropriate manner	- Communicate expectations - Communicate to students that they are not to put any of the materials in or near their mouth or eyes.
<b>10</b>	- Interaction with equipment and natural environment	- Teacher supervision - Conduct investigations in small groups

## Fantastic Forces Diagnostic Assessment

Student Name: \_\_\_\_\_

Year/ Stage: \_\_\_\_\_

Category	Working Below Stage Outcomes	Working At Stage Outcomes	Working Beyond Stage Outcomes
Content	Student answers question with limited to no understanding of content matter.	Student answers question with basic to sound understanding of content matter.	Student answers question with extended understanding of content matter.
Comprehension	Student is unable to accurately answer questions posed about the topic.	Student is able to accurately answer a few questions asked about the topic.	Student is able to accurately answer almost all questions posed about the topic.
Vocabulary	Uses several words or phrases that are not understood by the audience. Does not use any vocabulary created on the word wall.	Uses vocabulary appropriate for the audience. Does not use any vocabulary that might be new to the audience. Uses a few words that are present on the word wall.	Uses vocabulary appropriate for the audience. Extends audience vocabulary by defining words that might be new to most of the audience. Uses words from word wall.
Stays on topic	It was hard to follow student answer and tell what the topic was.	Stays on topic some (80%-75%) of the time.	Stays on topic all (100%) of the time.
Communicating Answer	Student has great difficulty communicating their answer.	Student is able to communicate their answer in one to two ways.	Student is able to communicate their answer in two or more ways.

### Overall Comment:

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## **Fantastic Forces – Final Assessment**

Student Name: \_\_\_\_\_

CATEGORY	<b>Achieving Beyond</b>	<b>Achieved</b>	<b>Developing</b>	<b>Not Developed</b>
<b>Content</b>	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
<b>Vocabulary</b>	Uses vocabulary appropriate for the audience. Extends audience vocabulary by defining words that might be new to most of the audience.	Uses vocabulary appropriate for the audience. Includes 1-2 words that might be new to most of the audience, but does not define them.	Uses vocabulary appropriate for the audience. Does not include any vocabulary that might be new to the audience.	Uses several (5 or more) words or phrases that are not understood by the audience.
<b>Stays on Topic</b>	Stays on topic all (100%) of the time.	Stays on topic most (99-90%) of the time.	Stays on topic some (89%-75%) of the time.	It was hard to tell what the topic was.
<b>Comprehension</b>	Student is able to accurately answer almost all questions posed by classmates about the topic.	Student is able to accurately answer most questions posed by classmates about the topic.	Student is able to accurately answer a few questions posed by classmates about the topic.	Student is unable to accurately answer questions posed by classmates about the topic.
<b>Enthusiasm</b>	Facial expressions and body language generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language sometimes generate a strong interest and enthusiasm about the topic in others.	Facial expressions and body language are used to try to generate enthusiasm, but seem somewhat faked.	Very little use of facial expressions or body language. Did not generate much interest in topic being presented.
<b>Collaboration with Peers</b>	Almost always listens to, shares with, and supports the efforts of others in the group. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others in the group. Does not cause "waves" in the group.	Often listens to, shares with, and supports the efforts of others in the group but sometimes is not a good team	

**Lesson 4 – Differentiated observation worksheet**

Lesson 4  
Worksheet

Name: \_\_\_\_\_

Predict whether your objects will sink or float- Circle which one  
Observe your object- Did it sink or float? Circle which one  
Draw and label why you thought you object sank or floated.

**Modified worksheet** - Students will draw their object and explanations and can write words if they choose.

Object- Draw your object	Predict	Observe	Explain- Why?
	Sink  Or  Float	Sink  Or  Float	

**Lesson 5 – Differentiated Procedure.**

**Your task:**

You are to write a procedure for the experiment that you just did in your science journal.

You are to include the following:

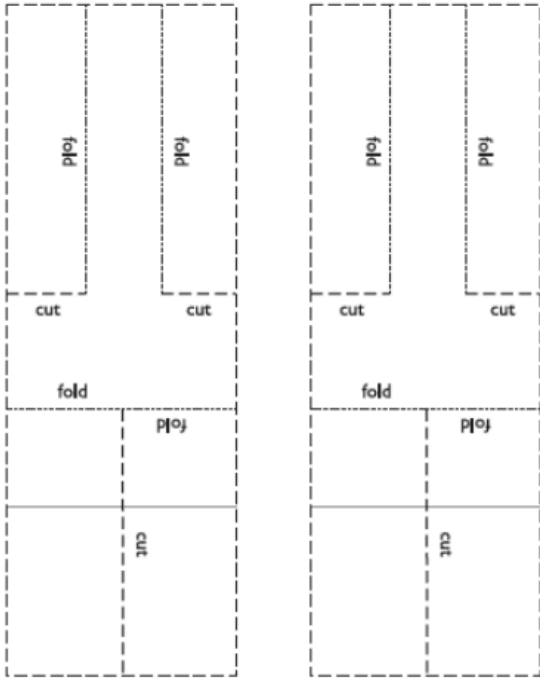
- Title
- Materials
- Steps
- An labelled drawing of what happened
- A few sentences on what happened

**Extension:** Above

**Core:** Students are given a worksheet with title and materials and are to complete the steps, drawing and conclusion themselves

**Modified:** Given a worksheet with all the materials and steps. They draw a picture for each step and one at the end.

### Lesson 7 – Helicopter Template



### Lesson 7 – Investigation Planner

□  
**Investigation planner**

<b>Question:</b> What happens to the helicopter fall time when we change the wing size?		
We will <b>change</b>		
We will <b>observe</b> which helicopter hits the ground first		
We will <b>keep the same</b>		

## Lesson 10 – Peer and Self Assessment

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Peer Evaluation - Final Evaluation

	😊	👍	😞
Uses word wall words			
Talks about push and pull			
Answers questions correctly			
Team work			
Uses gestures and expression			

I think your presentation was...

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Self-Evaluation - Final Evaluation

	😊	👍	😞
Uses word wall words			
Talks about push and pull			
Answers questions correctly			
Team work			
Uses gestures and expression			

REFERENCE LIST

Allen, P. (1996). *Who sank the boat?* (1st ed.). Upper Brookfield [Qld.]: Gecko Educational.

Australian Academy of Science. (2012). *Teaching Primary Science*. Retrieved from:  
[https://learnit.nd.edu.au/webapps/portal/frameset.jsp?tab\\_tab\\_group\\_id=\\_2\\_1&url=%2Fwebapps%2Fblackboard%2Fexecute%2Flauncher%3Ftype%3DCourse%26id%3D\\_21016\\_1%26url%3](https://learnit.nd.edu.au/webapps/portal/frameset.jsp?tab_tab_group_id=_2_1&url=%2Fwebapps%2Fblackboard%2Fexecute%2Flauncher%3Ftype%3DCourse%26id%3D_21016_1%26url%3)

Australian Sports Commission, (2009). *Yulunga Traditional Indigenous Games*. Retrieved from  
[http://www.ausport.gov.au/\\_data/assets/pdf\\_file/0003/376140/SP\\_31864\\_TIG\\_resource\\_4-6.pdf](http://www.ausport.gov.au/_data/assets/pdf_file/0003/376140/SP_31864_TIG_resource_4-6.pdf)

Board of Studies, New South Wales, (2006). K-6 Curriculum, *Creative Arts Syllabus*. Retrieved July 9, 2014 from  
[http://k6.boardofstudies.nsw.edu.au/wps/wcm/connect/ce607b51-27b2-45cb-b634-6522141e7c0a/k6\\_creative\\_arts\\_syl.pdf?MOD=AJPERES](http://k6.boardofstudies.nsw.edu.au/wps/wcm/connect/ce607b51-27b2-45cb-b634-6522141e7c0a/k6_creative_arts_syl.pdf?MOD=AJPERES)

Board of Studies, New South Wales, (2006). K-6 Curriculum, *Human Society and its Environment (HSIE) Syllabus*. Retrieved July 9, 2014 from [http://k6.boardofstudies.nsw.edu.au/wps/wcm/connect/93415130-2afa-4654-a740-cf3d399d2627/k6\\_hsie\\_syl.pdf?MOD=AJPERES](http://k6.boardofstudies.nsw.edu.au/wps/wcm/connect/93415130-2afa-4654-a740-cf3d399d2627/k6_hsie_syl.pdf?MOD=AJPERES)

Board of Studies, New South Wales, (2007). K-6 Curriculum, *Personal Development Health and Physical Education (PDHPE) Syllabus*. Retrieved July 9, 2014 from [http://k6.boardofstudies.nsw.edu.au/wps/wcm/connect/6e4311c5-336e-44f8-8c39-e289d96597a8/k6\\_pdhpe\\_syl.pdf?MOD=AJPERES](http://k6.boardofstudies.nsw.edu.au/wps/wcm/connect/6e4311c5-336e-44f8-8c39-e289d96597a8/k6_pdhpe_syl.pdf?MOD=AJPERES)

Board of Studies, New South Wales. (2012). *NSW Syllabuses for the Australian Curriculum: English K-10 Syllabus*. Retrieved from  
<http://syllabus.bos.nsw.edu.au/english/english-k10/>

Board of Studies, New South Wales. (2012). *NSW Syllabuses for the Australian Curriculum: Mathematics K-10 Syllabus*. Retrieved from  
<http://syllabus.bos.nsw.edu.au/mathematics/mathematics-k10/>

Board of Studies, New South Wales. (2012). *NSW Syllabuses for the Australian Curriculum: Science K-10 (Incorporating Science and Technology K-6) Syllabus*. Retrieved from <http://syllabus.bos.nsw.edu.au/science/science-k10/>



Education Services Australia Ltd, (2013). *Pushing and Pulling*. Retrieved from <http://www.scootle.edu.au/ec/viewing/L1120/index.html>

Fleer, M., Jane, B., & Hardy, T. (2007). *Science for Children: Developing a personal approach to teaching* (3<sup>rd</sup> ed). French Forest, NSW: Pearson.

Kids-Songs TV, (2012). *Who Built the Ark*. Retrieved from YouTube <https://www.youtube.com/watch?v=QGNMW6WRvLs>

Primary Connections Linking Science with Literacy, (2012). *Push-pull, Year 2, Physical Sciences*. Retrieved from [http://www.scootle.edu.au/ec/viewing/S7158/push-pull-2012/resources/push\\_pull\\_comp.pdf](http://www.scootle.edu.au/ec/viewing/S7158/push-pull-2012/resources/push_pull_comp.pdf)

Science Sparks, (n.d). *Baking Soda Powered Boat*. Retrieved from <http://www.science-sparks.com/2013/09/25/baking-soda-powered-boat/>

State of NSW, Department of Education and Training, Curriculum K–12 Directorate, 2009. *Science and Technology K-6: Literacy and Numeracy Demands*. Retrieved from [http://www.curriculumsupport.education.nsw.gov.au/primary/scitech/assets/pdf/Stage\\_1\\_oct.pdf](http://www.curriculumsupport.education.nsw.gov.au/primary/scitech/assets/pdf/Stage_1_oct.pdf)